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August 31, 2004

Mr. John Robertus, Executive Officer
San Diego Regional Water Quality Control Board
9771 Clairemont Mesa Blvd, Suite A
San Diego, CA 92124-1331

Dear Mr. Robertus:

TENTATIVE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR DUKE ENERGY SOUTH BAY, LLC, SOUTH BAY POWER PLANT, ORDER NO. 2004-0154 PERMIT NO. CA0001368

Department of Fish and Game (Department) staff have reviewed tentative Order No. 2004-0154 for the renewal of the NPDES permit for the cooling water discharge to south San Diego Bay from Duke's South Bay Power Plant located in the City of Chula Vista, California. The tentative permit would allow for the discharge of up to 602.2 million gallons per day (mgd) of cooling water to south San Diego Bay. As a result of our review, the Department has the following several concerns, comments and recommendations.

Effluent Temperature Compliance Point and Schedule

It is the Department's understanding that the point of compliance for the effluent temperature limitations has been moved to the property boundary line. It is also our understanding that the discharger has been given until the expiration date of the new order, approximately 2009, to comply with this new requirement. The Department agrees that the compliance point for the effluent temperature limitations should be at the property line. We indicated this in our comment letter on the previous renewal permit (Order No. 2001-83) dated March 2nd 2002. We justified this recommendation by the fact that the permit order issued in 1996 (Order No. 96-05), established that the old discharge channel was part of south San Diego Bay. Finding No. 42 of Order No. 96-05 states, "[i]t has not been demonstrated that it is appropriate to allow a mixing zone and/or a dilution zone factor for the discharge from the South

Bay Power Plant to San Diego Bay. However, this Order provides for modification of this Order if the Regional Board later finds that a mixing zone and/or dilution factor is appropriate for the discharge from the South Bay Power Plant to San Diego Bay". Order No. 2001-83 did not establish a mixing zone nor did it establish a dilution factor and as such the compliance point for all effluent limitations should have become the end of the pipe where the discharge enters the bay. San Diego Gas and Electric's own studies on the benthic invertebrate community in the "old discharge channel" have revealed that this area has been degraded. Finding No. 33 of Order No. 96-05 states, "[t]he study concluded that high temperatures caused by the elevated temperature wastes discharge in late summer-fall had an adverse effects on benthic life within the discharge channel itself when compared to other parts of San Diego Bay". Since that time Duke Energy has completed a new 316(a) study and again it was found that the thermal discharge is having a significant adverse effect on the benthic community (including the absence of eelgrass) within the discharge channel. This degradation is primarily due to the extreme temperatures associated with the discharge. The existing discharge requirements allow for temperatures during the late summer/early fall to exceed 100^{0} F. Given that studies have documented adverse impacts since1996, and that the previous Order did not require the discharger to move the compliance point or to conduct studies to establish a dilution zone, the allowance of an additional five years before the plant operations come into compliance for effluent limitations (including temperature) seems unwarranted.

Tentative Order No. R9- 2004-0154 requires Duke Energy to submit a work plan to address how they intend to comply with the new thermal requirements. The tentative order allows Duke 24 months to develop and submit this workplan. The Department is concerned about the timing of such compliance. The discharger has been on notice since 1996 that the discharge of thermal wastes from the South Bay Power Plant has had adverse impacts and that the discharge has not been in compliance with the thermal effluent limitations established by previous orders. The Department believes that eight years is ample time to address such non-compliance. The addition of an additional five years to comply is not justifiable. Therefore, the Department recommends that the time schedule for compliance be significantly shortened. We further recommend that the workplan be submitted within one year of the adoption of the Tentative Order and that implementation of the plan be initiated within three years of the adoption of the Order.

In addition, to the shortened time line of compliance, the Department believes that the adverse impacts that are a result of the thermal discharge from the South Bay Power Plant to South San Diego Bay, should be addressed through mitigation. These impacts are severe, both in scope and duration. We recommend that the discharger be required to develop and submit a workplan that will address these impacts through mitigation alternatives. This work plan should be submitted within one year of the adoption of the permit with initiation of the restoration workplan beginning within two years of the adoption of the permit.

Compliance with 316(B) Impingement and Entrainment Issues

The South Bay Power Plant has been in operation since the early 1960s. Billions of gallons of water have flowed through this facility. Associated with these flows are the marine organisms that utilize this water as their habitat. Fish, macro-invertebrates, zooplankton, and phytoplankton all share this water with the power plant. In order to determine if the power plant's intake structure and technology are having an effect on these organisms as well as determine compliance with Section 316(b) of the Clean Water Act, the then owner SDG&E was required to complete studies to address impingement and entrainment effects caused by the intake of cooling water from San Diego Bay. These studies were undertaken and the report submitted in December 1980. Thirteen years later, in September 1993, the USEPA completed its review of the report and concurred with the results which indicated that the power plant's intake system utilized technology that minimized adverse environmental impacts. USEPA, therefore, concluded that the South Bay Power Plant met the requirements of Section 316(b). However these studies were conducted more than 20 years ago. The 1980 316(b) studies were conducted under much different circumstances than we have today. These circumstances include: (1) the flow rates during 1980 studies were below the maximum flowrates allowed by previous Order No. 2001-83 and tentative Order No. 2004-154; (2) the discharge channel was not considered part of San Diego Bay; (3) the entrainment of the elevated temperature discharge from the discharge channel back into the intake channel was not considered; and (4) the available technology from 1980 to 2004 has changed. As a result, Order No. 2001 -83 required the discharger to conduct a new 316(b) study in order to characterize the impingement and entrainment impacts associated with the cooling water intake system utilized at the plant.

The required 316(b) study has been completed. The results of the 2001-2003 study indicate that the plant is causing impingement and to a greater extent entrainment impacts. However, the report states that these impacts are less than significant. Department staff has done a preliminary review of the 316 (b) document and we have concerns with the conclusions reached in the final report.

The final report indicates that larval forms of five taxa make up 99 percent of the entrainment impacts. These include a CIQ goby complex (complex made up shadow, arrow and cheekspot gobies), anchovies, silversides, blennies and longjawed mudsuckers. The report indicates that a number of models (fecundity hindcasting [FH], adult equivalent loss [AEL] and empirical transport model [ETM]) were used to determine adult losses as it corresponds to larval entrainment losses. Table 5.4.1 of the report identifies that for anchovies, 13 percent of the adult population and 15.1 percent of the silverside adult population for the source water would be lost annually due to larval entrainment losses. Table ES-1 of the report indicates that in 2003 approximately 27 percent of the goby complex larval from the source water population was lost and 50 percent of the longjaw mudsucker larval population was lost due to entrainment.

The Department does not believe that such losses are insignificant and that these types of loses would have effects on the source water populations. It should be noted that the information to determine overall long term impacts is not available since baseline data on the populations prior to the power plants operation is not available. In light of this information, the Department does not believe that power plant, as it currently is operated, is in compliance with the new 316(b) regulations. The draft fact sheet and the findings of the draft permit confirm the Department's position and indicate that the current intake system does not comply with the new regulations. On page 4, the draft fact sheet states "[t]he results of the 2003 study indicate that Duke Energy does not meet the impingement and entrainment performance standards for the new 316(b) rule". To address this non-compliance issue the draft permit requires Duke Energy to complete a demonstration study as well as submit a report on collection of information in support of the study. According to the fact sheet "[p]ursuant to Section 125.95(b)(1) of the new 316(b) rule, the draft permit requires that Duke Energy to perform a Comprehensive Demonstration Study to confirm that the power plant meets the performance standards of the rule. The new rule allows the discharger up to four years to demonstrate compliance with the requirements of the new rule. The Comprehensive Demonstration Study will be due no later than 3 years and 180 days after adoption of the tentative Order. Duke Energy is also required to submit a Proposal for Information Collection prior to submittal of the Comprehensive Demonstration Study. The Proposal for Information Collection will be due no later than one year and 180 days after adoption of the tentative Order".

Pursuant to Section 125.94(a) of the new rule (Compliance Alternatives), the discharger must select and implement one of five alternatives to comply with the rule. The five alternatives summarized below establish best technology available for minimizing entrainment and impingement impacts:

(a) The discharger may demonstrate that the flow from the power plant will be reduced to commensurate with a closed cycle re-circulating system or that the maximum through-screen design intake velocity will be reduced to 0.5 ft/s or less.

(b) The discharger may demonstrate that the existing design and construction technologies, operational measures, and/or restoration measures meet the performance standards specified in Section 125.94(b) of the rule and/or the restoration requirements specified in Section 125.94(c) of the rule.

(c) The discharger may demonstrate it will install and properly operate and maintain, design and construction technologies, operational measures, and/or restoration measures that will, in combination with any existing design and

construction technologies, operational measures, and/or restoration measures, meet the performance standards specified in paragraph (b) of this section and/or the restoration requirements in paragraph (c) of this section.

(d) The discharge may demonstrate that it has installed, or will install, and properly operate and maintain an approved design and construction technology in accordance with Sections 125.99(a) or (b) or the rule.

(e) The discharger may demonstrate that it has selected, installed, and is properly operating and maintaining, or will install and properly operate and maintain design and construction technologies, operational measures, and/or restoration measures that the Regional Board has determined to be the best technology available to minimize adverse environmental impact for the power plant (based on a site-specific, best technology available, cost analysis conducted in accordance with Section 125.94 (a)(5)(i) or (ii) of the rule).

Duke Energy is also required to submit a *Proposal for Information Collection* prior to submittal of the *Comprehensive Demonstration Study*. The *Proposal for Information Collection* as required by Section 125.95(b)(1) of the rule must include the following information:

(a) A description of the proposed and/or implemented technologies, operational measures, and/or restoration measures to be evaluated in the Study.

(b) A list and description of any historical studies characterizing impingement mortality and entrainment and/or the physical and biological conditions in the vicinity of the cooling water intake structures and their relevance to this proposed Study. If the discharger proposes to use existing data, it must demonstrate the extent to which the data are representative of current conditions and that the data were collected using appropriate quality assurance/quality control procedures;

(c) A summary of any past or ongoing consultations with appropriate Federal, State, and Tribal fish and wildlife agencies that are relevant to this Study and a copy of written comments received as a result of such consultations.

(d) A sampling plan for any new field studies the discharger proposes to conduct in order to ensure that there is sufficient data to develop a scientifically valid estimate of impingement mortality and entrainment at the site. The sampling plan must document all methods and quality assurance/quality control procedures for sampling and data analysis. The sampling and data analysis methods proposed must be appropriate for a quantitative survey and include consideration of the methods used in other studies performed in the source

water body. The sampling plan must include a description of the study area (including the area of influence of the cooling water intake structure(s)), and provide a taxonomic identification of the sampled or evaluated biological assemblages (including all life stages of fish and shellfish).

The Department believes that the 2001-2003 316 (a) and (b) studies have provided sufficient evidence that thermal, entrainment and impingement impacts are being realized as a result of the operation of the South Bay Power Plant. Although certain aspects of these studies could be improved and additional studies may be warranted to delineate these impacts, it seems that the next effort should be towards completing the components of the Comprehensive Demonstration study that deal with technology alternatives and more importantly restoration/mitigation measures. The discharger has already completed a preliminary review of existing technologies to address impingement and entrainment and have concluded that the majority of the most effective technologies are either not feasible or cost prohibitive.

It should be noted that the discharger has indicated that their lease from the Port of San Diego will expire in 2009 and that at this time they do not foresee operating this facility past that date. This adds credence to the conclusion that a technical fix is not feasible since operation may cease in 2009. If the impacts can't be resolved by technological fixes then the next logical step is to develop restoration/mitigation measures. The Department, therefore, recommends that the draft permit be amended to require a more concerted effort be made to develop the restoration aspect of the Comprehensive Demonstration Study. We further recommend that the time frame for completing such efforts be shortened and require Duke to submit the restoration measures component no later than two years after the adoption of the permit. The Department further recommends that the approved restoration measures be initiated as soon as possible but no later than three years from approval. The Department requests that we be included as a reviewing agency in any development of such restoration measures.

The Department appreciates the opportunity to review the subject permit. We look forward to working with the Regional Board staff and Duke to ensure that adequate and appropriate restoration is developed and implemented.

As always, Department personnel are available to discuss our concerns, comments and recommendations in greater detail. If the Department can be of further assistance or should you have any questions, please feel free to contact Mr. William Paznokas, Staff Environmental Scientist, Department of Fish and Game 4949 Viewridge Avenue, San Diego, CA 92123 or telephone, (858) 467-4218.

Sincerely,

ERIC J. LARSON
Northern California Marine Manager
Marine Region- Belmont

cc: William Paznokas
Department of Fish and Game
Marine Region-San Diego